

## FACTORING WORKSHEET/REVIEW

FACTOR COMPLETELY.

$$1. \quad 60d^3 + 55d^2 - 75d$$

$$\frac{180}{9} \quad 5d(12d^2 + 11d - 15d)$$

$$\frac{180}{9} \quad 5d(3d + 5)(4d - 3)$$

$$3. \quad (p^2 - 8)(p + 1) - (p + 1)$$

$$(p + 1)[(p^2 - 8) - 1]$$

$$(p + 1)(p^2 - 9)$$

$$(p + 1)(p - 3)(p + 3)$$

$$5. \quad (x^3 + y^3) + (x^2 - y^2)$$

$$(x + y)(x^2 - xy + y^2) + (x - y)(x + y)$$

$$(x + y)[x^2 - xy + y^2 + x - y]$$

$$7. \quad (x + 5)^3 - 8$$

$$[(x + 5) - 2][(x + 5)^2 + 2(x + 5) + 4]$$

$$[x + 3][x^2 + 10x + 25 + 2x + 10 + 4]$$

$$(x + 3)(x^2 + 12x + 39)$$

$$9. \quad 6(2x - 3)^5 - 23(2x - 3)^4 + 21(2x - 3)^3$$

$$(2x - 3)^3 [6(2x - 3)^2 - 23(2x - 3) + 21]$$

$$(2x - 3)^3 [2(2x - 3) - 3][3(2x - 3) - 7]$$

$$(2x - 3)^3 (4x - 6 - 3)(6x - 9 - 7)$$

$$(2x - 3)^3 (4x - 9)(6x - 16)$$

$$2(2x - 3)^3 (4x - 9)(3x - 8)$$

$$11. \quad (x^2 + 2x + 7)^2 - (x^2 + 3x - 5)^2$$

$$(x^2 + 2x + 7 - x^2 - 3x + 5)(x^2 + 2x + 7 + x^2 + 3x - 5)$$

$$(-x + 12)(2x^2 + 5x + 2)$$

$$-(x - 12)(2x + 1)(x + 2)$$

$$13. \quad 18y + 25x^2 - y^2 - 81$$

$$-y^2 + 18y - 81 + 25x^2$$

$$-[(y^2 - 18y + 81) - 25x^2]$$

$$-[(y - 9)^2 - 25x^2]$$

$$-(y - 9 - 5x)(y - 9 + 5x)$$

$$2. \quad x(x - y)^2 - 9x$$

$$x[(x - y)^2 - 9]$$

$$x[(x - y) - 3][(x - y) + 3]$$

$$x(x - y - 3)(x - y + 3)$$

$$4. \quad 4x^{-3}(x - 3)^{-5} - 2x^{-1}(x - 3)^{-3} + 3x(x - 3)^{-4}$$

$$x^{-3}(x - 3)^{-5}(3x^5 - 11x^4 + 12x^3 - 18x^2 + 4)$$

see attached

$$6. \quad 5a^3 + 2a^2 + 45a - 18$$

$$a^2(5a + 2) + 9(5a + 2)$$

$$(5a + 2)(a^2 + 9)$$

$$(5a + 2)(a - 3)(a + 3)$$

$$8. \quad (9x^2 + 6xy + y^2) + (3xz - yz)$$

$$(3x + y)^2 - z(3x + y)$$

$$(3x + y)[(3x + y) - z]$$

$$(3x + y)(3x + y - z)$$

$$10. \quad (a^2c^2 - 4a^2)(b^2c^2 + 4b^2)$$

$$a^2(c^2 - 4) - b^2(c^2 - 4)$$

$$(c^2 - 4)(a^2 - b^2)$$

$$(c - 2)(c + 2)(a - b)(a + b)$$

$$12. \quad 9(5x + 3)^2 - 24(5x + 3) + 16$$

$$[3(5x + 3) - 4]^2$$

$$(15x + 9 - 4)^2$$

$$(15x + 5)^2$$

$$25(3x + 1)^2$$

$$\frac{144}{12 \cdot 12}$$

$$14. \quad 3x^4 + 18x^2y^2 + 75y^4$$

$$3(x^4 + 6x^2y^2 + 25y^4)$$

$$3(x^4 + 10x^2y^2 + 25y^4 - 4x^2y^2)$$

$$3(x^2 + 5y^2)^2 - 4x^2y^2$$

$$3(x^2 + 5y^2 - 2xy)(x^2 + 5y^2 + 2xy)$$

$$(4) \quad 4x^{-3}(x-3)^{-5} - 2x^{-1}(x-3)^{-3} + 3x(x-3)^{-4}$$

$$4x^{-3}a^{-5} - 2x^{-1}a^{-3} + 3xa^{-4}$$

$$x^{-3}a^{-5}(4 - 2x^2a^2 + 3x^4a)$$

$$x^{-3}(x-3)^{-5}[4 - 2x^2(x-3)^2 + 3x^4(x-3)]$$

$$x^{-3}(x-3)^{-5}(4 - 2x^2(x^2 - 6x + 9) + 3x^5 - 9x^4)$$

$$x^{-3}(x-3)^{-5}(4 - 2x^4 + 12x^3 - 18x^2 + 3x^5 - 9x^4)$$

$$\boxed{x^{-3}(x-3)^{-5}(3x^5 - 11x^4 + 12x^3 - 18x^2 + 4)}$$